TENNESSEE DEPARTMENT OF EDUCATION
FIRST TO THE TOP

Foundations of Distribution & Logistics

Primary Career Cluster:	Transportation, Distribution & Logistics
Consultant:	Casey Haugner Wrenn, (615) 532-4879, Casey.Haugner@tn.gov
Course Code(s):	6069
Prerequisite(s):	None
Credit:	1
Grade Level:	9-10
Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Transportation courses.
Programs of Study and Sequence:	This is the first course in the *Distribution & Logistics* program of study.
Necessary Equipment:	None
Aligned Student Organization(s):	Skills USA: http://www.tnskillsusa.com Brandon Hudson, (615) 532-2804, Brandon.Hudson@tn.gov
Coordinating Work-Based Learning:	If a teacher has completed work-based learning training, appropriate student placement can be offered. To learn more, visit http://www.tn.gov/education/cte/wb/.
Available Student Industry Certifications:	None
Dual Credit or Dual Enrollment Opportunities:	There are no known dual credit/dual enrollment opportunities for this course. If interested in developing, reach out to a local postsecondary institution to establish an articulation agreement.
Teacher Endorsement(s):	503
Required Teacher Certifications/Training:	None
Teacher Resources:	http://www.tn.gov/education/cte/TransportationDistributionLogistics.shtml

Course Description

Foundations of Distribution & Logistics exposes students to careers and businesses involved in the planning, management, and movement of people, materials, and products by road, air, rail, and water. As an introduction to this important and globally evolving field, this course covers the basic principles of logistics, reviews the history and development of distribution networks, and examines how they function within the dynamics of the supply chain. Students proficient in *Foundations of Distribution & Logistics* will explore career options; demonstrate an understanding of the historical, current, and future

significance of the distribution and logistics industries; and plan for the effective and efficient flow of goods and services. Standards in this course are aligned with Tennessee Common Core State Standards for English Language Arts & Literacy in Technical Subjects and Tennessee Common Core State Standards in Mathematics.*

Program of Study Application

This is the foundational course in the *Distribution & Logistics* program of study. For more information on the benefits and requirements of implementing this program in full, please visit the Transportation, Distribution & Logistics website at http://www.tn.gov/education/cte/TransportationDistributionLogistics.shtml.

Course Standards

Occupational Safety

1) Demonstrate the ability to comply with personal and environmental safety practices associated with the appropriate handling and storage methods of materials in accordance with local, state, and federal safety and environmental regulations.
    a. Inspect, maintain, and employ safe operating procedures with tools and equipment used in the warehouse and transportation area. Identify, demonstrate, and specify situations in which safety equipment such as harnesses, personal protective equipment (PPE), and eye wash stations are to be used.
    b. Adhere to responsibilities, regulations, and Occupational Safety & Health Administration (OSHA) policies regarding reporting of accidents and observed hazards, and regarding emergency response procedures. Differentiate between a recordable and non-recordable incident and describe the impact that each can have on a facility.
    c. Maintain a portfolio record of passed written safety examinations and equipment examinations.

    (TN CCSS Reading 3, 4; TN CCSS Writing 4)

Career Investigation

2) Identify and analyze career pathways within the Distribution & Logistics field. Cite supporting evidence from multiple career information sources, such as O*NET OnLine, to summarize the essential knowledge and skills required for these careers. Complete one or more career aptitude surveys, analyze the results, and compose an essay describing the relationships between personal career aptitudes and careers in Distribution & Logistics. (TN CCSS Reading 1, 2, 9; TN CCSS Writing 2, 4, 8, 9)

3) Compile and analyze real-time and projected labor market data from public sources such as the U.S. Bureau of Labor Statistics to investigate local and regional occupational opportunities and trends in the field of distribution and logistics. Synthesize collected data to develop an illustration comparing occupations by education requirements, job availability, salaries, and benefits. (TN CCSS Reading 2, 7; TN CCSS Writing 4, 8, 9)

History and Development of Distribution and Logistics

4) Synthesize research from informational texts to create an annotated timeline on the history of distribution and logistics. Using descriptive text, identify cultural, social, economic, and technological factors that have influenced the development of distribution and logistics. (TN CCSS Reading 2, 9; TN CCSS Writing 2, 4, 7, 9)

5) Analyze the importance of distribution and logistics in a global society. Investigate the influences of customer demands, ordering and managing inventory, forecasting, controlling inbound and outbound shipments, reducing costs, and saving time in product and service flow. (TN CCSS Reading 9; TN CCSS Writing 2, 4, 7)

6) Describe the ways that companies can gain a competitive advantage using logistics to distribute their products and services. Research media profiles of businesses that made their operations more sophisticated through the use of logistics management, and explain the factors that contributed to their success. (TN CCSS Reading 1, 2)

Components of Logistics, Transportation & Distribution

7) Research the components of logistics planning. Create a diagram depicting a network for a hypothetical product, labeling all of the nodes (fixed spatial points where goods stop for storage or processing) and links (the transportation network that connects the nodes) in the network. Prepare an accompanying paper or presentation that explains the diagram and describes what is happening at each node. (TN CCSS Reading 4, 7; TN CCSS Writing 4, 7)

8) Explore the five modes of transportation (truck, train, plane, ship, pipeline) used to move materials by land, air, or sea. For each mode of transportation, analyze the costs, benefits, and problems associated with that mode of transportation, including environmental impact. List items that are most often transported by each type of transportation. (TN CCSS Reading 1, 4; TN CCSS Writing 2, 4)

9) Examine the various types of distribution centers and describe how materials feed into and flow from each type in an illustrated paper. Include the following categories, as well as hybrid facilities where these categories overlap:
    a. Package handling center
    b. Warehouse or fulfillment center
    c. Cross-dock facility
    d. Bulk break center

    (TN CCSS Reading 1, 4, 7; TN CCSS Writing 2, 4)

Supply Chain Functions

10) Define the term supply chain and determine how the distribution and logistics domains fit within the larger supply chain. Develop a graphic illustration of a selected industry and map the movement of primary inputs and outputs on a global or local scale.

11) Research and describe the four major flows—product flow, information flow, financial flow, and demand flow—that occur in a supply chain. Analyze the impact that each has on the supply

chain as a whole and the interactions that must occur between the flows. (TN CCSS Reading 1, 4, 7; TN CCSS Writing 2, 4, 7)

12) Differentiate between the internal supply chain and external supply chain of an organization, including internal and external customers. Write an informative paper and accompanying graphic that describes how the two chains are interrelated. (TN CCSS Reading 1, 4, 7; TN CCSS Writing 2, 4, 7)

13) Research the following terms as related to supply chains: lean, green, and sustainable. Define and describe each term and give examples of ways they are implemented in a supply chain. (TN CCSS Reading 1, 4; TN CCSS Writing 4)

14) Create a glossary of terms related to supply chains and their management. Include acronyms. Add new terms to the glossary as they are encountered. (TN CCSS Reading 4; TN CCSS Writing 4)

15) Gather and analyze information from multiple authoritative sources (i.e., industry magazines, academic journals) to explain how the following functions work together to support the distribution of products and services:
    a. Transportation
    b. Warehousing
    c. Inventory control
    d. Material handling
    e. Information and communication systems

    (TN CCSS Reading 1, 4, 7; TN CCSS Writing 2, 4, 8)

Problem Solving

16) Create a list of the decisions that must be made, and the problems that could potentially arise, in a complex supply chain. Research individual and group problem-solving and decision-making strategies and prepare a presentation indicating which strategies would be best for each of the decisions or problems on the list. (TN CCSS Reading 1, 2, 4; TN CCSS Writing 4, 6)

17) Apply problem-solving and decision-making strategies to recommend and defend solutions to supply chain issues such as:
    a. Identifying efficient delivery routes having 3 or 4 stops
    b. Minimizing costs of parts and delivery charges from different sources using different modes of transportation

    (TN CCSS Reading 3, 4, 5, 7; TN CSS Writing 1, 2, 7; TN CCSS Math N-Q, F-BF, F-LE)

Management and Information Technology

18) Investigate the tools and processes used by companies to manage the flow of inputs and outputs within a supply chain. Determine how barcodes, radio frequency identification (RFID), unique identification (UID), and tagging methods (active and passive) are employed in the tracking and distribution of product flow. (TN CCSS Reading 5, 6)

19) Determine the ways that computers and other information technologies are used in a supply chain. Create a table or chart listing technologies/software that are used, and describe how they

improve supply chain function. For example, discuss the impact of automated warehouses on distribution and logistics functions within a company. (TN CCSS Writing 2, 4, 8)

Case Study

20) Synthesize information from industry, scholarly, and popular media sources outlining how a top 20 retailer has used supply chain management to become one of the largest retailers in the world. Create a model and presentation describing how the retailer handles the following areas of its global supply chain network:
    a. Customer service
    b. Distribution costing
    c. Distribution planning
    d. Information technology
    e. Materials and purchasing management
    f. Order processing systems
    g. Transport and inventory management

    (TN CCSS Reading 1, 4, 7, 8; TN CCSS Writing 2, 4, 7, 8)

Standards Alignment Notes

*References to other standards include:

- TN CCSS Reading: Tennessee Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects; Reading Standards for Literacy in Science and Technical Subjects 6-12; Grades 9-10 Students (page 62).
    - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standards 8 and 10 at the conclusion of the course.
- TN CCSS Writing: Tennessee Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects; Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12; Grades 9-10 Students (pages 64-66).
    - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standards 3, 5 and 10 at the conclusion of the course.
- TN CCSS Math: Tennessee Common Core State Standards for Mathematics: Math Standards for High School: Number and Quantity, Functions (pages 58-83).
    - Note: The standards in this course are not meant to teach mathematical concepts. However, the concepts referenced above may provide teachers with opportunities to collaborate with mathematics educators to design project based activities or collaborate on lesson planning. Students who are engaging in activities listed above should be able to demonstrate quantitative and functional reasoning as applied to specific technical concepts. In addition, students will have the opportunity to practice the habits of mind as described in the eight Standards for Mathematical Practice.
- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.